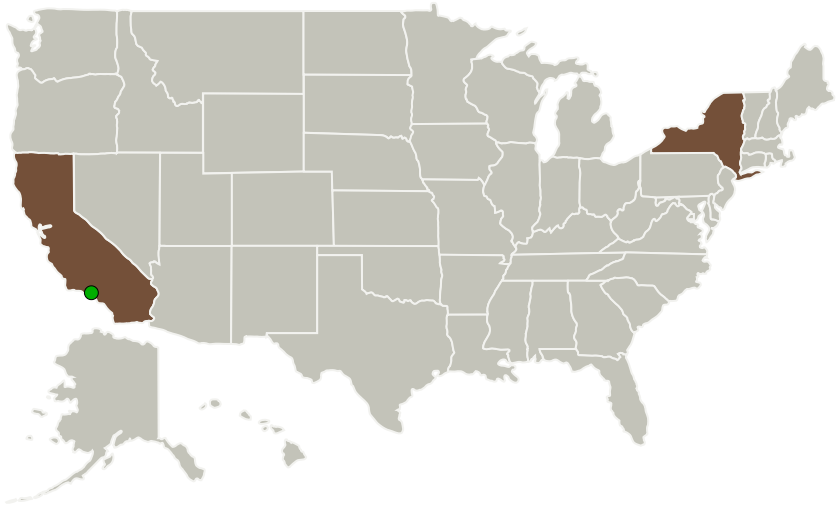
High Temperature Venus Drill and Sample Delivery System, Phase II

Completed Technology Project (2015 - 2017)

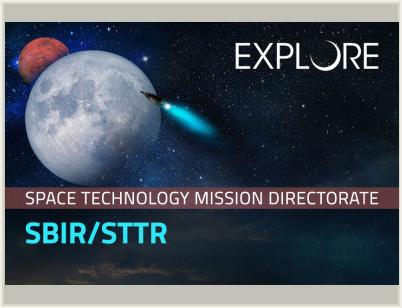
Project Introduction

Under Phase 1, we investigated HT Drill, HT Trencher, and Pneumatic Sample Delivery. We found that HT Trencher and Blower-based pneumatic system won't be feasible or carried high risk associated with development of HT cutter materials. Rotary drill also did not penetrate hard rocks. For Phase 2, we propose HT Rotary-Percussive drill and 'suction' based pneumatic sample delivery. Honeybee is also submitting a separate Phase 2 for 3 DOF HT arm. If that proposal gets selected, the arm will deploy the drill and deposit the sample. The pneumatic system would still be needed to move the sample into an instrument. We plan to design and build TRL 5 system and incorporate HT motors developed by Honeybee under prior SBIR projects. The demonstration will be done in a HT chamber. We will investigate possibility of testing at NASA JPL's Venus chamber. The demo will include drilling into hard rocks and sample transfer to a mock up instrument.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Honeybee Robotics, Ltd.	Lead Organization	Industry	Pasadena, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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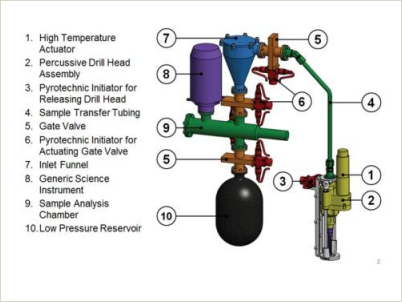
Primary U.S. Work Locations	
California	New York

Images



Briefing Chart
High Temperature Venus Drill and Sample Delivery System Briefing Chart
(https://techport.nasa.gov/image/135479)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Honeybee Robotics, Ltd.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Kris Zacny

Co-Investigator:
Kris Zacny

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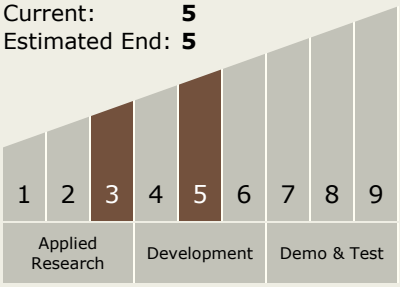
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System